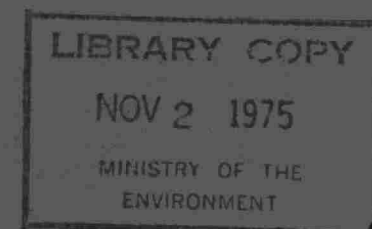


OPERATING SUMMARY

TOWN OF
SOUTHAMPTON

WATER TREATMENT PLANT and
WATER POLLUTION CONTROL PLANT

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MINISTRY OF THE ENVIRONMENT

MINISTER
Honourable William G. Newman

DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, SOUTHWESTERN REGION
D. McTavish

MANAGER, UTILITY OPERATIONS
A. Ladbrooke

SOUTHAMPTON
WATER TREATMENT PLANT
and
WATER POLLUTION CONTROL PLANT
operated for
THE TOWN OF SOUTHAMPTON
by the

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by
Plant Performance Unit
TECHNICAL SERVICES BRANCH
T. Cross, Director

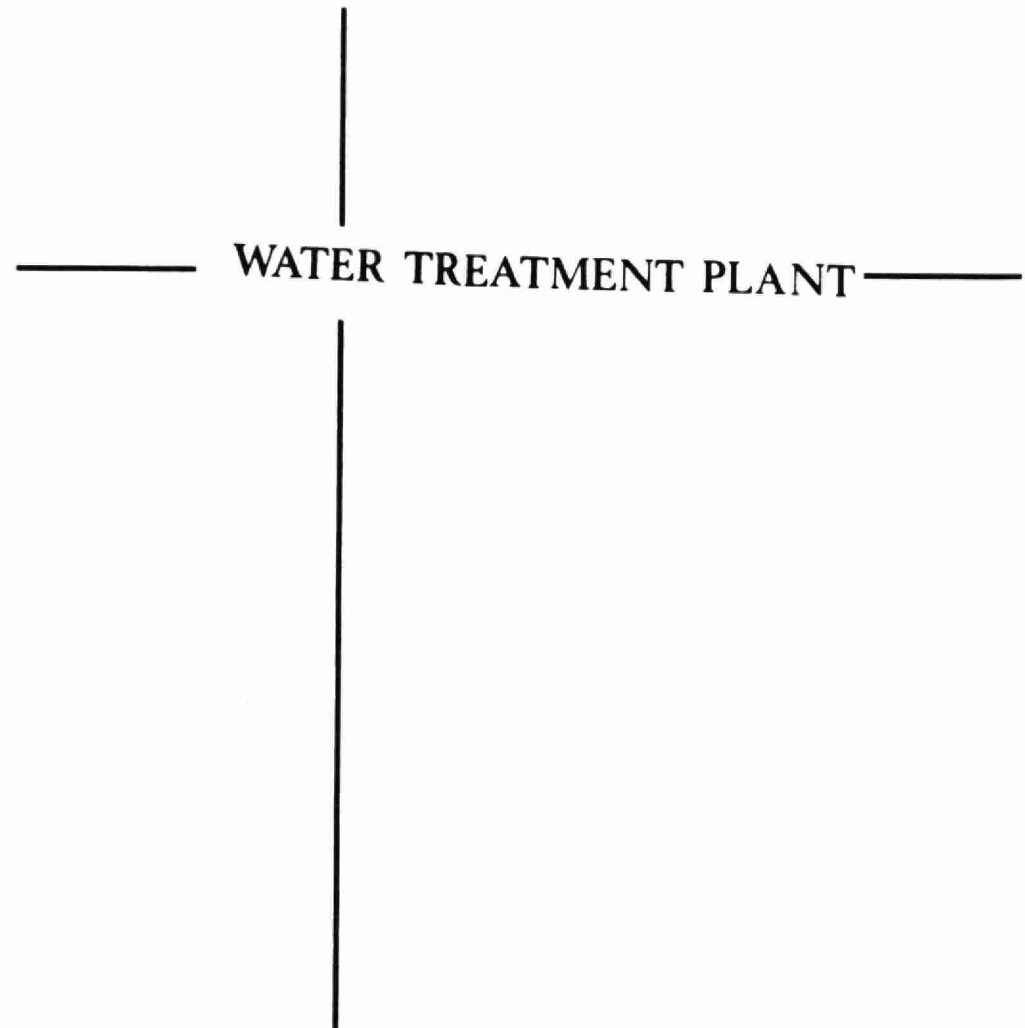
CONTENTS

WATER TREATMENT PLANT

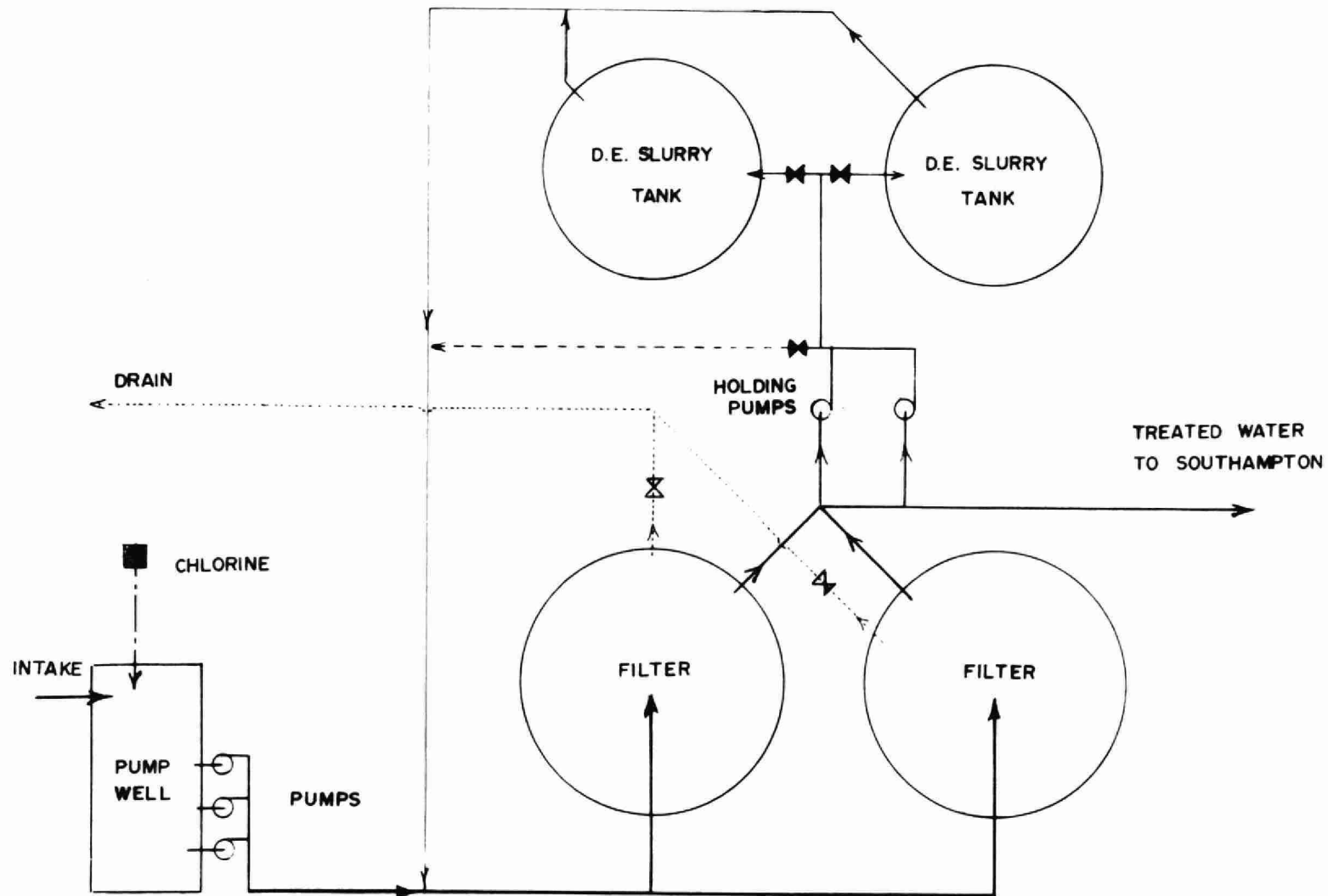
Flow Diagram	6
Design Data	7
Operating Cost	8
Process Data	10

WATER POLLUTION CONTROL PLANT

Flow Diagram	16
Design Data	17
Operating Cost	19
Process Data	21



TOWN OF SOUTHAMPTON WTP



DESIGN DATA

PROJECT Town of Southampton WTP NOMINAL CAPACITY

PROJECT NO. 6-0124-63 1.00 mgd

RAW WATER SOURCE

Lake Huron

INTAKE

Depth at crib: 15 ft

Pipe Size: 1100 ft of 24 in dia

CAPACITIES OF UNITS

Pumps: #1 700 igpm or 1.00 mgd

#2 700 igpm or 1.00 mgd

Standby 2100 igpm or 3.0 mgd

Filters: 2 x 350 = 700 igpm or 1.00 mgd

FILTRATION

Type: Bowser, pressure diatomaceous
earth filter

Size: Two filters rated at 350 gpm each
(1.75 gpm/ft²)

Surface: 400 ft² (total)

CHLORINATION

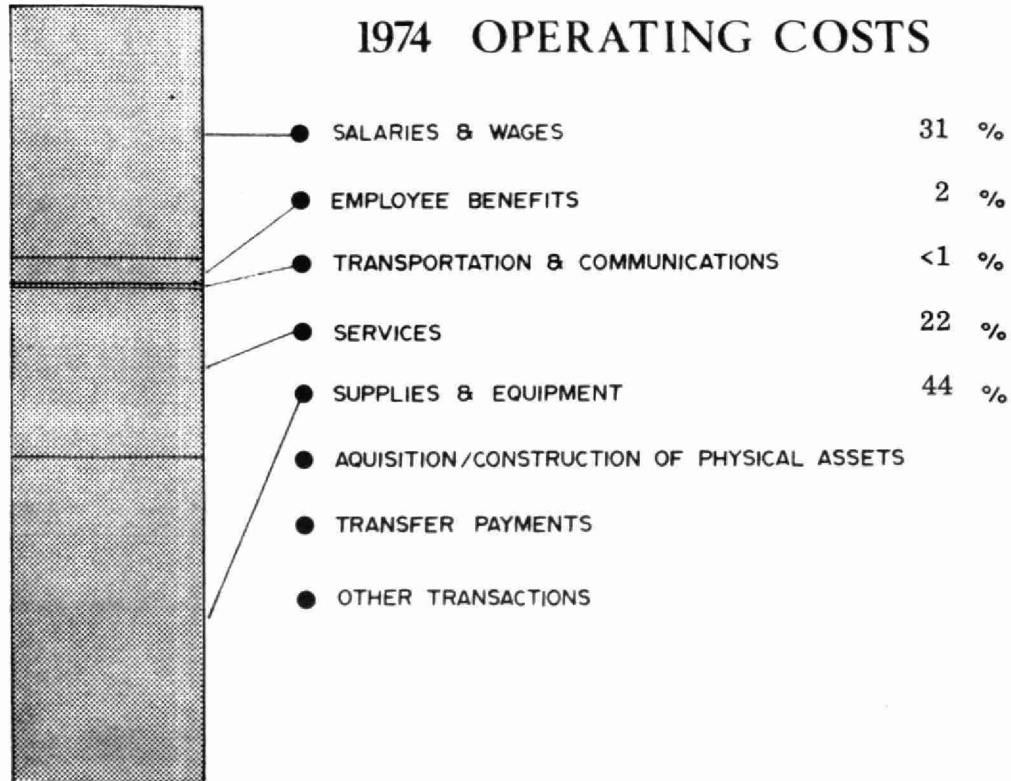
One Fischer & Porter gas chlorinator,
50 lb/day

STORAGE

Elevated Tank 100,000 gal (owned by
Town); useable volume 30,000 gal

ANNUAL COSTS

1974 OPERATING COSTS



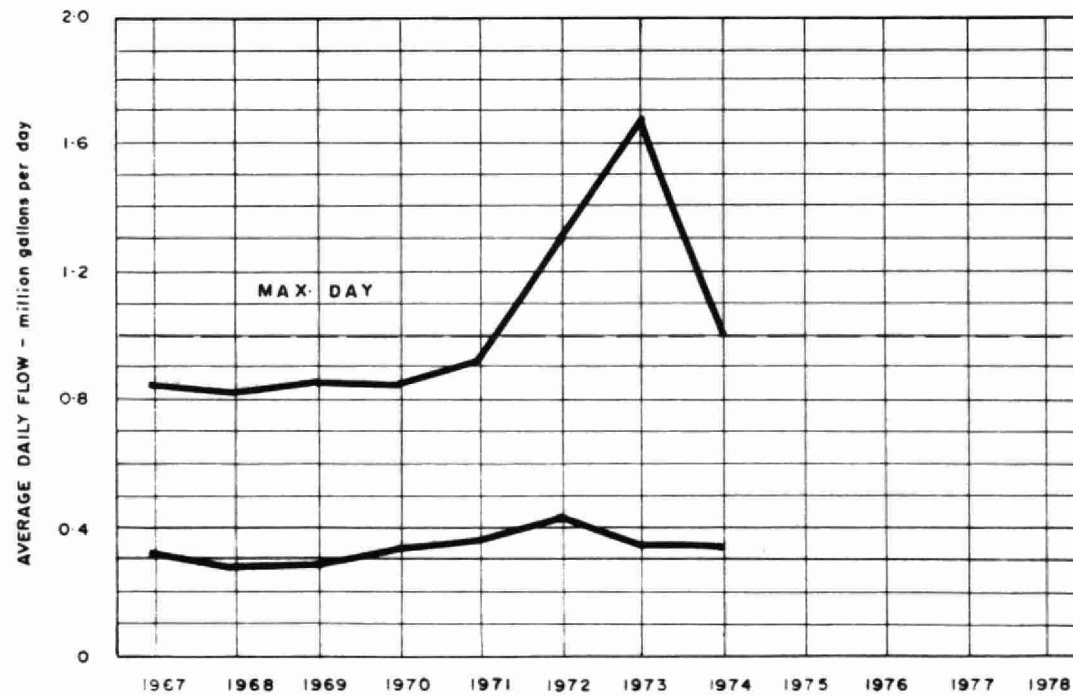
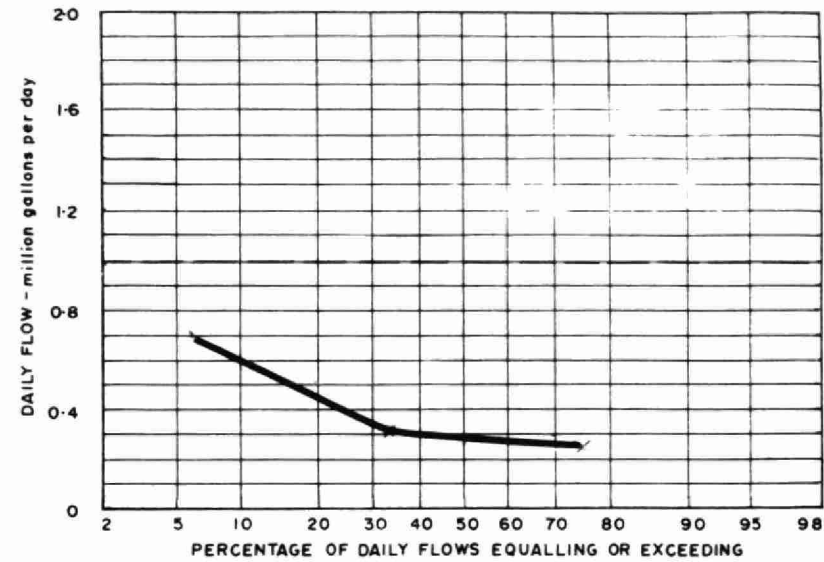
YEARLY OPERATING COSTS

YEAR	WATER TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS
			cents per 1000 gal
1969	102	15,805	16
1970	123	17,907	15
1971	131	20,338	16
1972	150*	15,516	10
1973	133	11,222	8
1974	123	29,215	24

OPERATING EXPENDITURES

Regular Staff	\$ 9,095	\$
Casual (Unclassified) Staff	-	
TOTAL SALARIES AND WAGES		9,095
TOTAL EMPLOYEE BENEFITS		760
TOTAL TRANSPORTATION AND COMMUNICATIONS		179
Insurance	614	
Sludge Haulage		
Repairs and Maintenance	5,551	
Other Services	205	
TOTAL SERVICES		6,370
Machinery and Equipment	3,806	
Chemicals	4,109	
Utilities	3,925	
Other Supplies and Equipment	971	
TOTAL SUPPLIES AND EQUIPMENT		12,811
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		
GRAND TOTAL	GRAND TOTAL	\$ 29,215

PROCESS DATA FLOWS



DESIGN CAPACITY - - - - -

PLANT PERFORMANCE

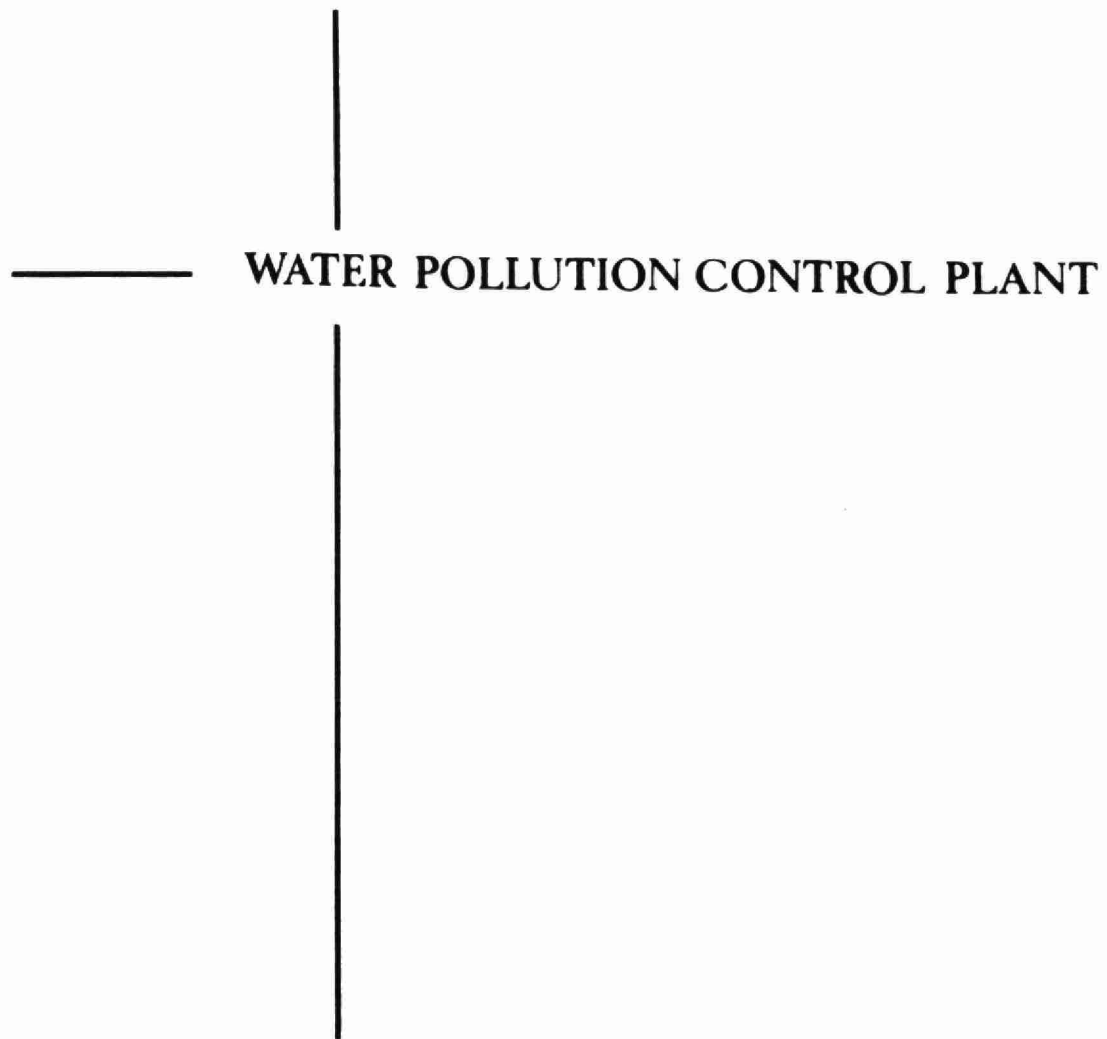
MONTH	FLOWS			RAW WATER		TREATED WATER		FILTER OPERATION			
	TOTAL PLANT OUTPUT million gallons	AVERAGE DAILY FLOW million gallons	MAXIMUM DAY'S FLOW million gallons	TURBIDITY (AVERAGE)	COLOUR (AVERAGE)	TURBIDITY (AVERAGE)	COLOUR (AVERAGE)	NUMBER OF DAYS USED	BACKWASH FREQUENCY	DIATOMACEOUS EARTH	
				FTU	App. units	FTU	App. Units			AMOUNT USED 10 ³ pounds	DOSE mg/l
JAN	7.41	.24	.41	2.7				15			
FEB	6.29	.23	.36	4.0	10	1.5	<5	8		1.6	
MAR	7.69	.25	.39	1.8	<5	2.8	<5	9		4.4	
APR	7.20	.24	.34	2.8	20	1.9	10	12		6.2	
MAY	8.49	.27	.36	1.2						1.6	
JUNE	12.96	.43	.69	.7	3	1.5	<5			.6	
JULY	21.36	.69	1.00	.5	10	4.0	12			0	
AUG	15.85	.51	.88	.6		1.3	<5			0	
SEPT	9.95	.33	.47	1.1	5	5.4	3			0	
OCT	8.87	.29	.34	1.2		1.1	<5			0	
NOV	7.87	.26	.47	12.8	30	1.7	<5			5.6	
DEC	9.56	.31	.39	2.0	27	2.7	3			.5	
TOTAL	123.50									20.5	
AVG.		.34	1.00	2.6	13	2.1	<5				

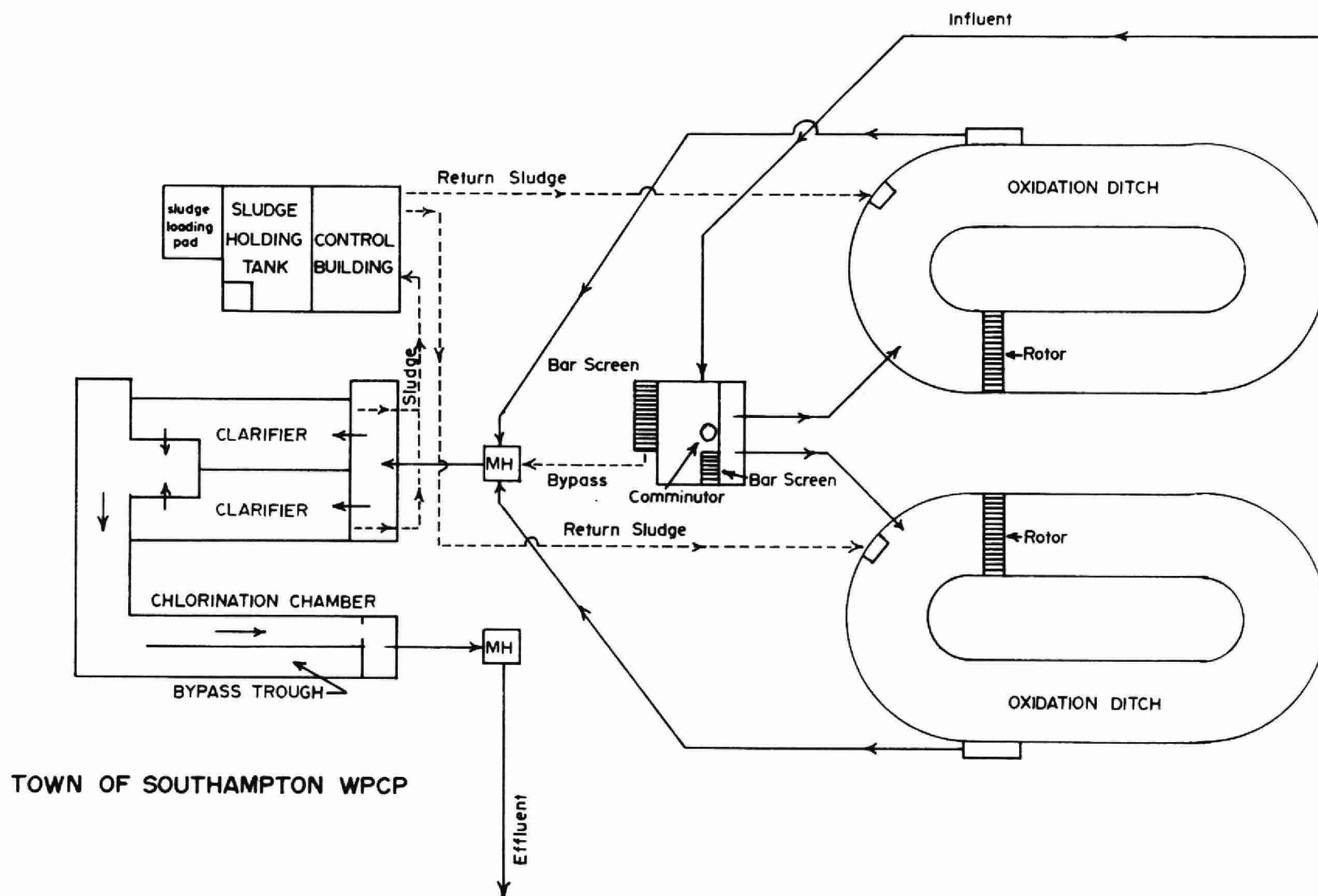
CHLORINATION and DISINFECTION

MONTH	RAW WATER					PLANT EFFLUENT		DISTRIBUTION SYSTEM		CHLORINATION			
	NUMBER OF SAMPLES HAVING TOTAL COLIFORM ORGANISMS PER 100 ml OF					NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	TOTAL AMOUNT OF CHLORINE USED pounds	DOSAGE		RESIDUAL IN PLANT EFFLUENT mg/l
	0	1 - 3	4 - 32	33 - 320	> 320						PRE - mg/l	POST - mg/l	
JAN	5	0	0	0	0	0		10	1	74	1.0		.6
FEB	5	0	0	0	0	0		8	0	85	1.4		.5
MAR	3	2	0	0	0	1	0	8	0	108	1.4		.5
APR	4	2	1	0	0	1	0	13	0	111	1.5		.5
MAY	0	0	0	0	0	0	0	0	0	120	1.4		.6
JUNE	4	0	0	0	0	0	0	11	0	192	1.5		.8
JULY	0	0	0	0	0	0	0	0	0	291	1.4		.9
AUG	0	0	0	0	0	0	0	0	0	225	1.4		.9
SEPT	0	0	0	0	0	0	0	0	0	162	1.6		.8
OCT	0	0	0	0	0	0	0	0	0	144	1.6		.8
NOV	0	0	0	0	0	0	0	0	0	148	1.9		.6
DEC	0	0	0	0	0	0	0	0	0	145	1.5		.7
TOTAL	21	4	1	0	0	2	0	50	1	1805			
A/V.G.	0 (NOTE - Average shown is the GEOMETRIC MEAN)									5 pounds per day	1.4		.7

WATER QUALITY

PROPERTY	RAW WATER				TREATED WATER				DESIRABLE STANDARDS
	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	
HARDNESS in mg/l as CaCO_3	16	108	124	96	17	123	206	98	80 - 100
ALKALINITY in mg/l as CaCO_3	16	82	89	77	17	91	146	77	30 - 100
IRON in mg/l Fe	15	1.08	2.90	.45	17	.12	.35	<.05	Less than 0.3
CHLORIDE in mg/l Cl^-	16	6	8	0	17	7	10	0	Less than 250
pH in pH units	16	8.1	8.4	7.9	17	8.1	8.5	7.9	7.0 - 8.5
FLUORIDE in mg/l F^-	10	.1	.2	0.0	15	.1	.2	0	Less than 1.2
AMMONIA in mg/l as N									Less than 0.5
TOTAL KJELDAHL NITROGEN in mg/l as N									Less than 1.
NITRITE in mg/l as N									
NITRATE in mg/l as N	1	.19	.29	.09	1	.41	.42	.40	Less than 10





DESIGN DATA

PROJECT: Town of Southampton WPCP
PROJECT NO: 1-0027-66
TREATMENT: Modified extended aeration
DESIGN CAPACITIES: Winter - 0.29 MIGD
Summer - 0.67 MIGD

DESIGN POPULATION: Summer- 6700
Winter- 2900

BOD - RAW SEWAGE: Winter-493 lb/day
Summer-950 lb/day

PUMPING STATIONS

P.S. NO. 1

PUMPS

Type: variable-speed
Size: two each 1850 USGPM @ 107' TDH

SCREENING

Type: Bar screen (manually cleaned)
Gravity overflow

P.S. NO. 2

PUMPS

Type: FLYGT Submersible
Size: Two, each 800 USGPM @ 35' TDH

P.S. NO. 3

PUMPS

Type: FLYGT Submersible
Size: Two, each 240 USGPM @ 74' TDH

PRETREATMENT

SCREENING

Bar Screen (manually cleaned)

COMMINUTION

Size: 16" dia
Motor: 3 HP

BIOLOGICAL TREATMENT

OXIDATION DITCHES

Two, Volume (each) 290,000 I.G.
Retentions: winter (1 ditch): 24 hr
summer (2 ditches): 20.8 hr

AERATORS (1 per ditch)

Size: two, each 27.5" dia x 20' l
Motors: 25 HP

FINAL SEDIMENTATION TANKS

Size: Two, each 14' x 48' x 12' awl
Volume(total): 100,000 I.G.
Retentions: winter (1 tank): 4.2 hr
summer (2 tanks): 3.6 hr
Loadings: surface-winter (1 tank):
430 IGPD/ft²
summer-(2 tanks) 500 IGPD/ft²

Weir:-winter (1 tank)
4,000 IGPD/lin ft
summer (2 tanks)
4620 IGPD/lin ft

RETURN ACTIVATED SLUDGE PUMPS

Type: Centrifugal
Size: Two, each 5500 USGPM @ 25' TDH

CHLORINATION

CHLORINE CONTACT CHAMBER

Size: One, 6' x 48' x 9' awl
Volume: 16,200 I.G.
Retentions: winter(@ 0.29 MIGD) 80 min
summer(@ 0.67 MIGD) 35 min

SLUDGE HANDLING

SLUDGE HOLDING TANK

Size: One, 21' x 30' x 11' awl

Volume: 6,700 ft³

Loading: winter-2.31 ft³/cap.
summer-1.00 ft³/cap.

SLUDGE PUMP

Type: Duplex plunger

Size: One, 200 USGPM @ 40' TDH

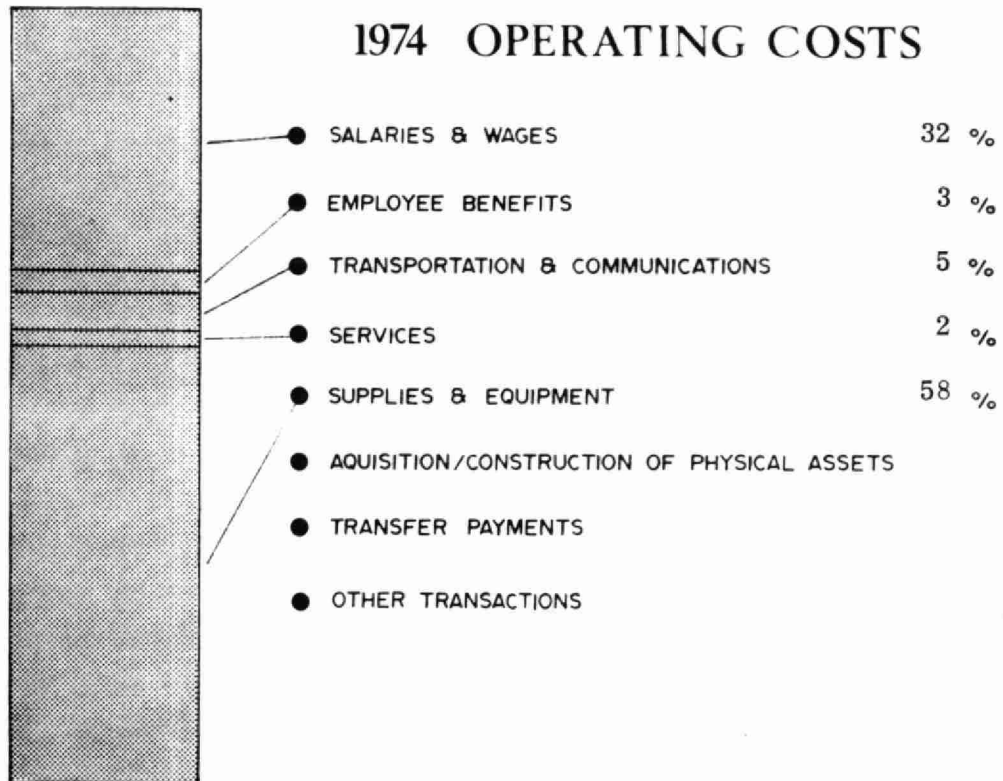
SLUDGE AERATION

Size: One, 270 cfm @ 7.0 PSIG

Motor: 10 HP, 1150 rpm

ANNUAL COSTS

1974 OPERATING COSTS



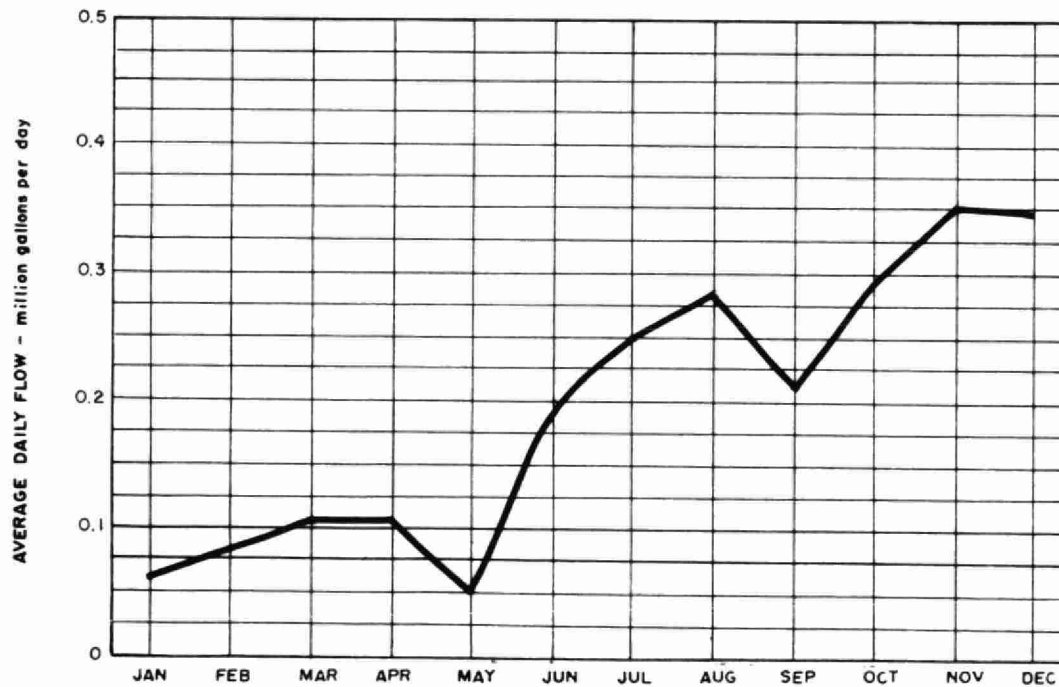
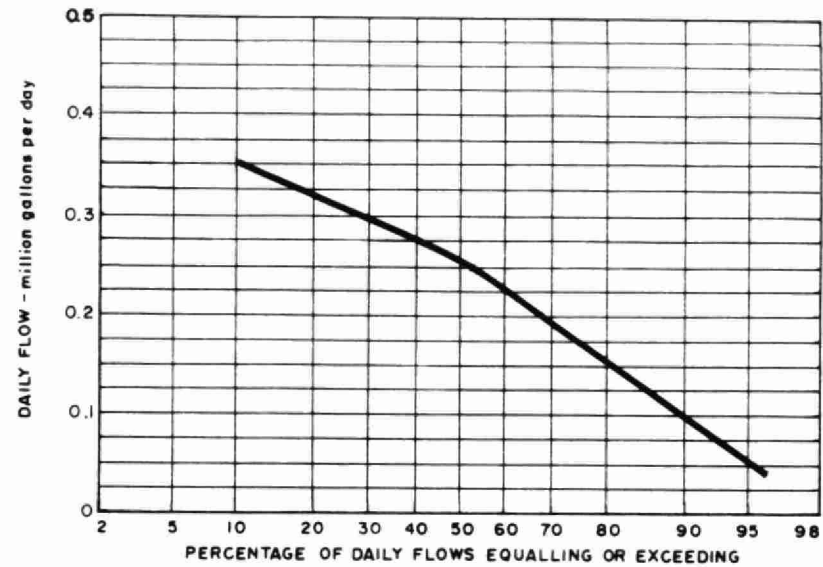
YEARLY OPERATING COSTS

YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS	
			\$/M.G.	¢/lb BOD
1 974	71.61 Est.	48,050	671	116

OPERATING EXPENDITURES

Regular Staff	\$ 14,567	\$
Casual (Unclassified) Staff	983	
TOTAL SALARIES AND WAGES		15,550
TOTAL EMPLOYEE BENEFITS		1,311
TOTAL TRANSPORTATION AND COMMUNICATIONS		2,525
Insurance	391	
Sludge Haulage	128	
Repairs and Maintenance	197	
Other Services	330	
TOTAL SERVICES		1,046
Machinery and Equipment	13,030	
Chemicals	315	
Utilities	5,248	
Other Supplies and Equipment	8,989	
TOTAL SUPPLIES AND EQUIPMENT		27,582
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		36
GRAND TOTAL	GRAND TOTAL	\$ 48,050

PROCESS DATA FLOWS

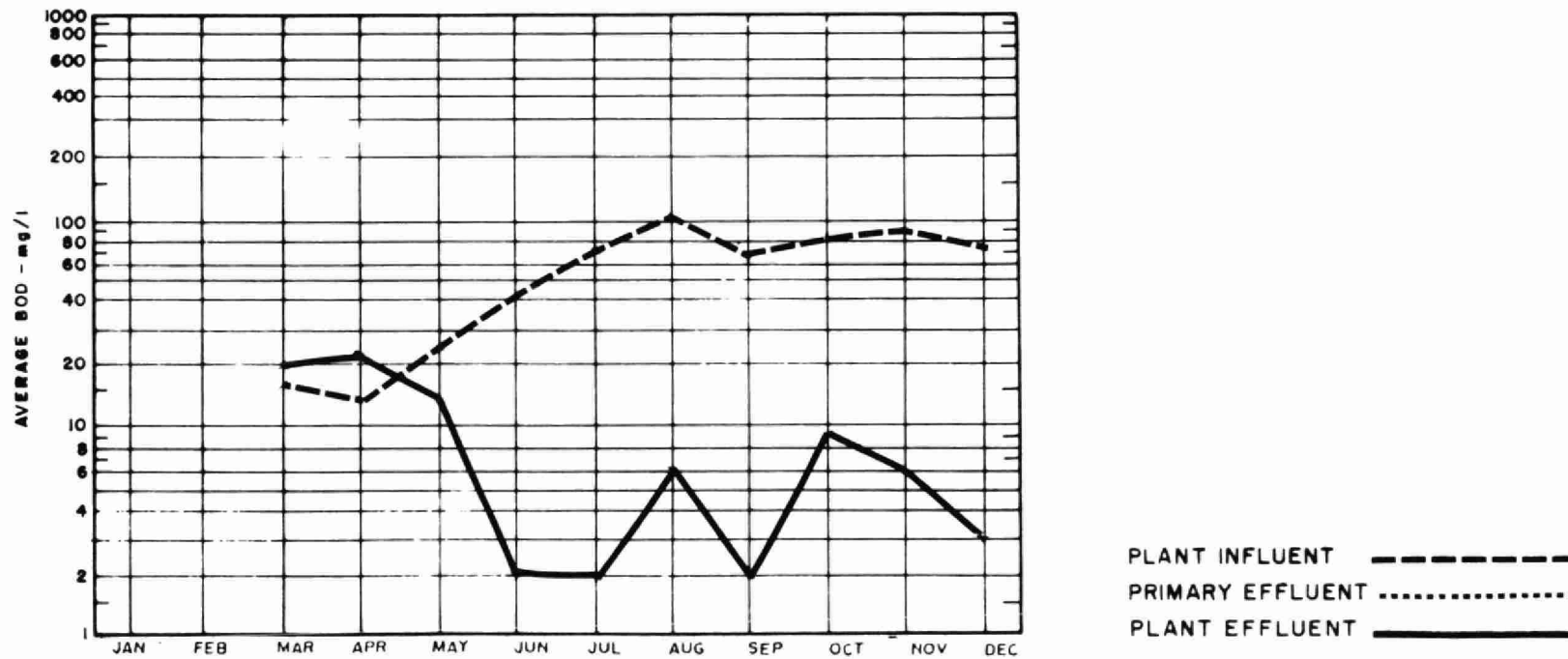
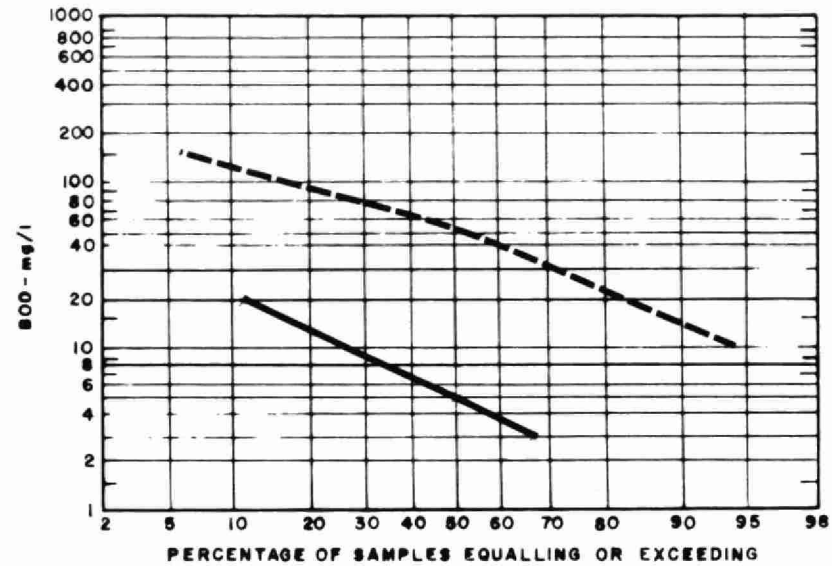


DESIGN CAPACITY - - - - -

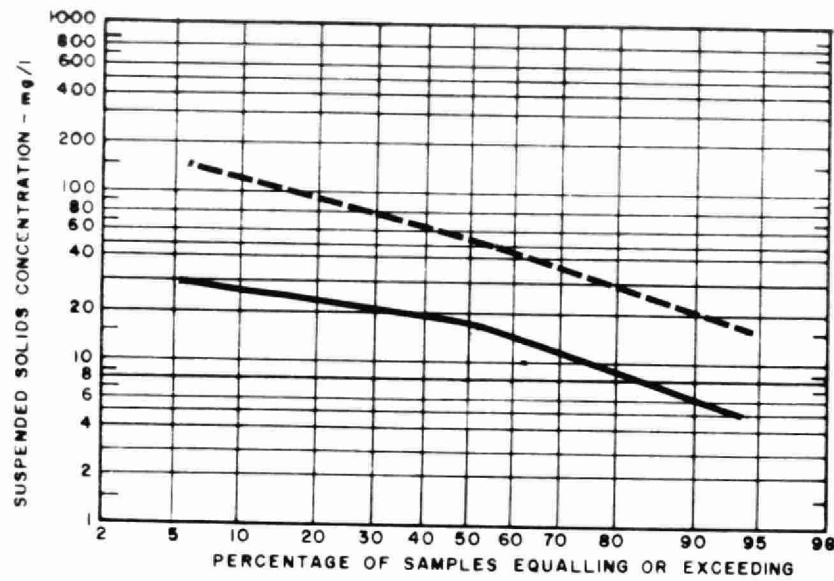
PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW million gallons	AVERAGE DAY mil. gal	MAXIMUM DAY mgd	INFLUENT mg/l	EFFLUENT mg/l	REDUCTION		INFLUENT mg/l	EFFLUENT mg/l	REDUCTION		INFLUENT mg/l P	EFFLUENT mg/l P
						%	pounds			%	pounds		
JAN	1.87	.06	.11										
FEB	2.28	.08	.10										
MAR	3.38	.11	.15	16	20			25				1.4	1.5
APR	3.62	.12	.04	13	24			20	15	25	181	1.1	1.6
MAY	1.48	.05	.11	26	14	46	178	30	20	33	148	1.3	1.0
JUNE	5.91	.20	.37	42	2	95	2365	70	5	93	3844	3.0	1.9
JULY	7.63	.25	.28	72	2	94	5341	185	7	96	13581	13.1	2.0
AUG	8.75	.28	.38	102	6	94	8400	115	13	89	8925	5.8	4.2
SEPT	6.66	.22	.29	66	2	97	4262	92	10	89	5461	4.9	4.2
OCT	9.28	.29	.40	82	9	89	6774	82	17	79	6032	3.8	2.8
NOV	10.36	.35	.45	90	6	93	8702	130	15	88	11914	4.5	2.6
DEC	10.39	.34	.36	75	3	96	7480	110	17	85	9662	4.0	2.8
TOTAL	71.61	-	-	-	-	-		-	-	-		-	-
AVG.		.20	MAXIMUM .45	65	7	89	3463	94	13	86	4836	4.8	2.7
No. of Samples	-	-	-	17	17	-	-	17	16	-	-	17	17

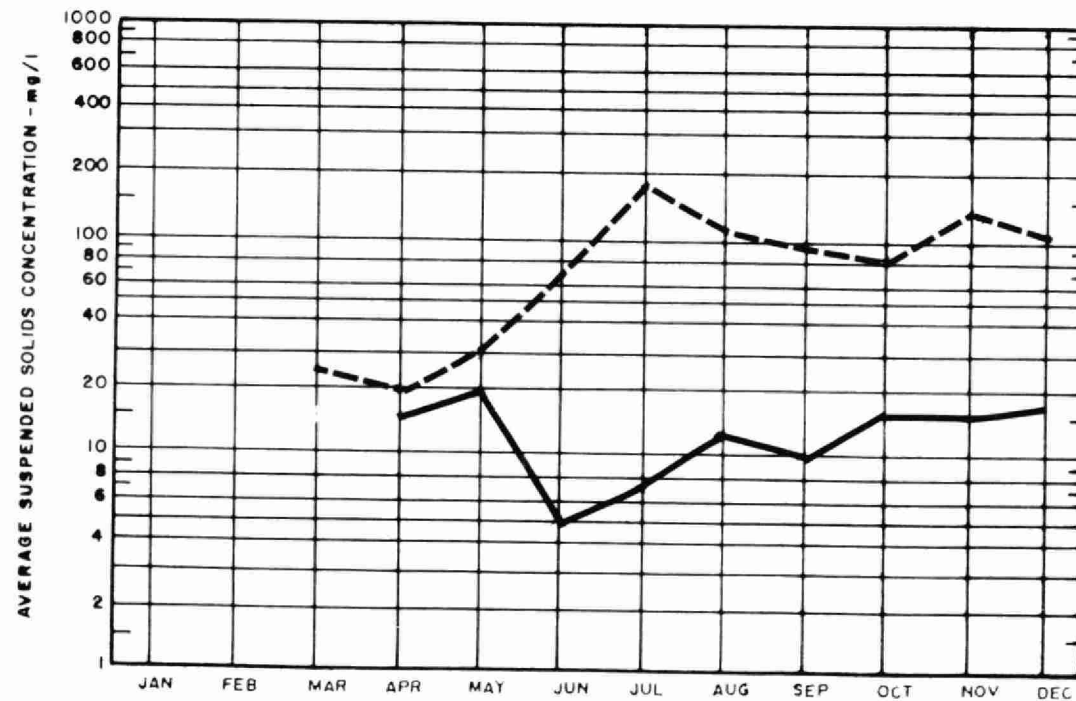
BIOCHEMICAL OXYGEN DEMAND



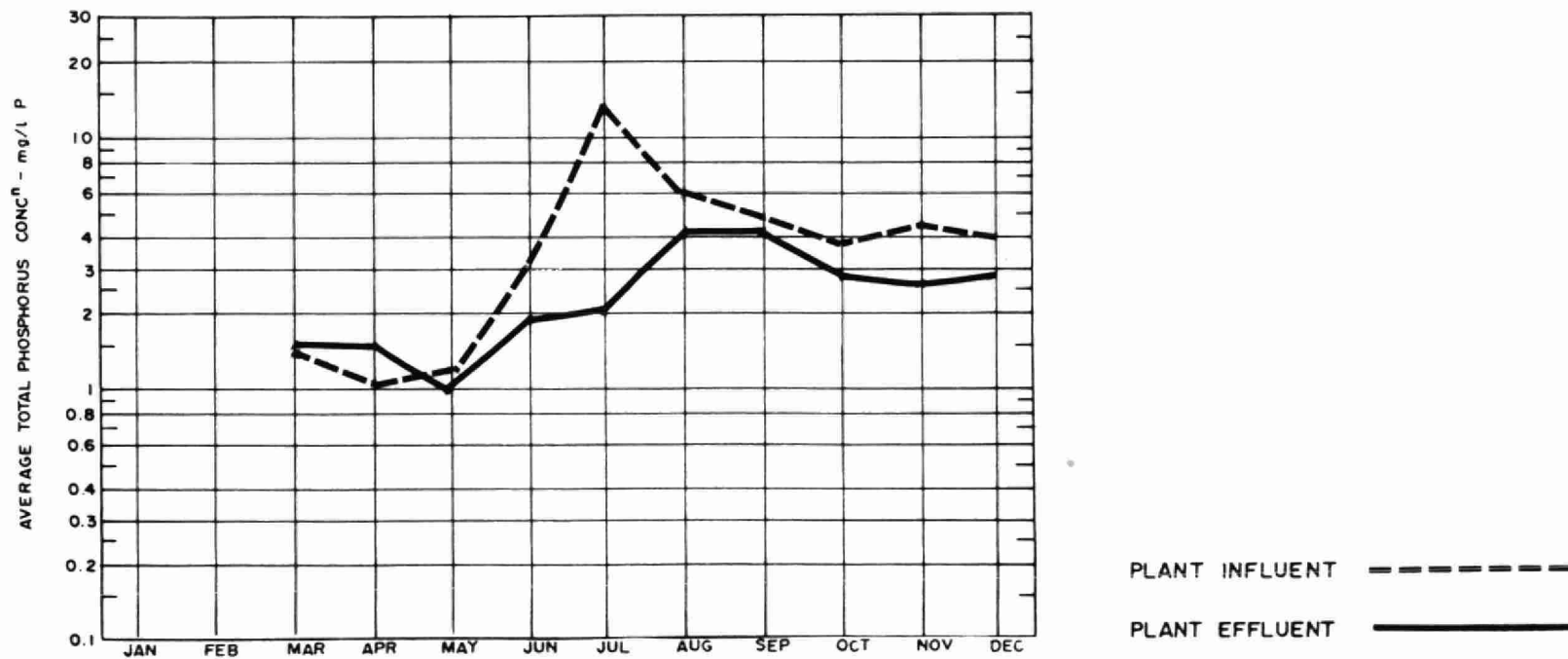
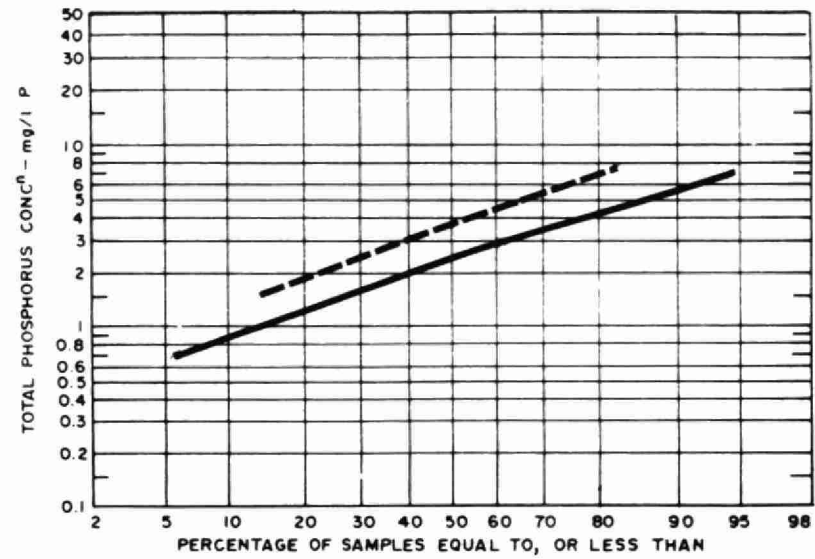
SUSPENDED SOLIDS



PLANT INFLUENT 
 PRIMARY EFFLUENT 
 PLANT EFFLUENT 



PHOSPHORUS



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